1: Longrigg G-4, 5 (ca. 1915-1940) MH1 Iraq MH1

technique included blackmail. Rickety boat-bridges served a dozen of the riverain towns. Street lighting consisted, at the best, of a few battered oil-lamps. Water was supplied by donkey-borne waterskins from the river, or from polluted wells in private court-yards; only in Baghdad was a single quarter of the town furnished by pipes with silt-laden untreated water. Municipal street-sweepers maintained some appearance of decency in the main lanes and bazaars, while filth and stenches abounded in the rest. Every town and larger village had cemeteries in its midst or on its fringes. Khans for caravans or wayfarers were found everywhere; hotels approaching the lowest European standard existed only in Baghdad.

Municipal administration was entrusted, save in unorganized villages, to a Mayor and his council. These functionaries, elected by procedures which could amount to Government nomination, enjoyed some local prestige; but their powers in practice were limited so rigidly that the local Governor in fact controlled all projects and all expenditure. Baghdad in the 'nineties was divided into three *baladiyas*, two for the left bank and one for the right. The Mayor was a member or nominee of one of its leading families or, rarely, a Government official. Municipal law was not inadequate, the code of taxation and procedure meticulous, its sphere of nominal activity reasonable. But in practice these administrations were corrupt and futile, and effective chiefly in providing a salary for a city notable and free servants for the local Governor. Nevertheless, pride of city was not lacking and schemes of town improvement were popular topics throughout decades of inactivity.

The picture of urban society of the period must embrace varying scenes. Basra with its miles of date gardens and network of tidal creeks, the activity of its riverain suburb—the sole seaport of 'Iraq—its daily contacts with Najd and Muhammara, its rich garden-owning notables, its cosmopolitan merchants and agents, had a character unique in 'Iraq. Of the other towns of Basra sanjaq, Qurna was tribe-dominated, the growing village of Abu al-Khasib non-tribal, and Zubayr a desert-fringe town ruled by a hereditary Shaykh. Among Basra's leading families were those of the Naqib, and the houses of Basha'yan, Mandil, and Sani'.

Baghdad city with a mainly Sunni right bank and an all-Shi'i and largely Persian left, and its important suburbs of Kadhimiya, Mu'adhdham, and Qarara formed by far the greatest commercial centre in the wilayas. It was industrially important, administratively and militarily dominant. The city was mean, without modern improvements, without protection against river floods; it was adorned only by two or three monuments and mosques of interest and by the great shrine of 'Abd al-Qadir al-Gaylani. With

1: Longrigg G-4, 5 (ca. 1915-1940) MH1 Iraq MH1

goods from the trans-'Iraq route to Muhammara and the new Persian port of Bandar Shahpur all contributed to lessen the long-profitable transit trade, whose sentence of extinction could not, it seemed, be long delayed unless the Mediterranean route across Syria could be developed; and of this there were hopeful signs.

Banking continued in the hands of local *ṣarrafs* and the three British Banks: the Ottoman, Eastern, and Imperial Bank of Persia. The adoption of the decimal system was officially proclaimed in 1931, though twenty years later the *ḥuqqa*, the *taghar*, the *mann*, and the *dhira'* were still widely in use. Wholesale and retail trade followed familiar channels, with British firms predominating in the foreign element; 30 per cent. of the country's imports were of United Kingdom origin, though neither in this nor in any commercial operation did the Mandatary claim advantage over competitors. Imported goods found favour less by quality than by cheapness; this allowed Japanese competition for the first time to intrude, especially in cheap silk and cotton textiles. Woollen goods and steel came from Belgium, sugar from Holland, vehicles from America, wood from Scandinavia and Rumania, rice and tea from India, and most of the rest, notably cotton textiles, pumps and machinery, from Great Britain. The exports, as ever, were of dates, grain, hides and skins, wool, intestines, liquorice, and live animals. These at lowered prices held their own satisfactorily during the period of depression. Monetary conditions in Europe led, after 1930, to export of gold from 'Iraq, giving a temporary stimulus to its economy.

Until the hard times of 1929 to 1932, which they survived creditably, municipal development and the public services were expanding. A Municipal Law of 1929 superseded the Turkish regulations, municipal revenues were overhauled, and the hundred townships of every size and degree pursued their work of street improvement, bridge building, and provision of gardens, electric power plants, and sometimes officials' houses. In the major towns a period of rapid suburban development began, absorbing capital used hitherto in the transit trade. A 'New Baghdad' was planned on the right bank of the Tigris. The concession given in 1912 for electric power was amended and confirmed, after years of negotiation, in favour of the Baghdad Power and Light Company, and a new power-house came into operation; the tramway project was abandoned. Tolerable hotels appeared in the three cities and in Kirkuk, supplemented by Railway rest-houses at smaller towns. The technique of brick-making, the methods in the building industry, the types of modern dwelling-house, domestic equipment, the scale and resources of the shops: all these advanced incomparably beyond Ottoman standards. European dress was

1: Longrigg G-4, 5 (ca. 1915-1940) MH1 Iraq MH1

old, mere trouble and recalcitrance, but a contribution both economically and politically valuable to a modern State.

In the towns, an observer of conditions in 1950 was faced with the same dilemma as in the tribes: how extensive was the change, if any, which fifty years had brought about? Outwardly at least, it was considerable. If some parts of the towns were as narrow, airless, and planless as of old—if the same donkeys carried the same goods for sale amid the flies and jostling of the same bazaars—yet in the main traffic streets and the new quarters all was changed and unrecognizable; and modernized surroundings, with the public State services now maintained, could not but contribute to the sum of urban well-being. All the larger towns had improved approaches, modern suburbs ranging from a few villas to whole areas of planned streets, planted boulevards, public gardens, and modern public buildings[1] immensely superior to those of Ottoman Turkey, few and cheaply constructed as these buildings had been forced to be.[2] Street-cleaning services were—save perhaps in the labyrinth of an 'old quarter'—not inadequate; streets were well maintained, increasingly paved, and widened where possible. Town planning schemes were under execution with the inclusion, or the hope, of house-building developments for the working poor and for Government officials; and private enterprise in building was encouraged by the improved security, the well-kept title-registers, the development of town amenities, and the need for outlets for safe investment. In the capital a modern omnibus service—the autonomous Baghdad Passenger Transport Board—supplied all needs and would naturally be, as in Baṣra it had been, imitated in the provincial towns. Taxicabs were everywhere abundant and in Baghdad had nearly, but not quite, driven the ancient *'arabana* from the streets. Traffic control was excellent. Steel or masonry bridges had in many places besides Baghdad and Mosul replaced the primitive pontoon river crossings. Modern shops had come year by year into existence, and could provide buyers of all classes with all but exceptional needs. Hotels offered a near approach to normal European service. The cinema was well established; American, European, and Egyptian films were shown in some sixty picture-theatres throughout 'Iraq. Efficient fire services existed in the principal towns, and had well justified themselves. Systems of piped water and electrical installations for power and lighting had been constructed in all larger towns; the

[1] The mausoleum of King Faysal I, built in 1934–6, is usually accounted the finest modern building in 'Iraq.

[2] Large sums were however allotted by the Development Board to building projects for the period 1951–6: for hospitals and health institutions, ID 5,400,000: for schools, 5,400,000: for other public buildings, 5,250,000: and for housing (officials and the poor), 1,650,000.

1: Longrigg G-4, 5 (ca. 1915-1940) MH1 Iraq MH1

power station at Baghdad was the property of a British company, that of Basra belonged to the Port, while Kirkuk was supplied with current by its all-providing oil company.

The revised labour legislation of 1942, the activity of the Ministry of Social Affairs, interest in International Labour Office literature and standards, and the employment since 1949 of a British expert on labour questions were guarantees that, though part of the Code was not applied, progress was real towards an effective interest in urban labour conditions and safeguards; it extended to trade union organization, the establishment of Labour Exchanges, housing schemes and welfare, and plans for social security whose realization was delayed only by their high cost. Meanwhile limited welfare facilities—dispensaries, canteens, clubs, sports grounds—were offered voluntarily by a few employers such as the Port, the Railways, and the more considerable industrial companies. They were provided on a much larger scale, and as part of a comprehensive organization, by the oil companies.

In domestic living standards, if it was true that the modernization and Westernization of the urban middle and lower-middle classes still left 'the poor' little better provided in their own homes than fifty years earlier, yet the proportion of households able to rise above their old deficiencies had much increased, and the private life of the middle as of the upper classes showed that in their domestic equipment and housing, hygiene, clothes, and range of interests great changes had been somehow effected in the last two generations. In men's and women's clothing, in the appearance and conduct of households, the serving of meals, and more generally in family and social life, Western ways had gained much ground. Resistance to the emancipation of women was now narrowing; the Muslim veil was frequently discarded; women learned and taught, entered the professions of medicine and law, followed politics (including Communism), took part in social work, and through their Women's Society were heard to demand the franchise. Circles, however, where women were strictly secluded were still considerable, and included the households of many leading notables and the royal family itself.

Social life was diversified by increased visiting between families, by the cinematograph, by cabarets of both Oriental and Western type, by casinos and modernized cafés. The traditional coffee shop kept its place for the male members of all classes and, within the social grade for which each catered, was still the club and business centre of thousands. Club life had developed to include the exclusive social clubs of the rich, the middle-class professional clubs of the lawyers, Army officers, and officials of various branches of Government, and a dozen sporting clubs; but the

438 more attractive for industry than other areas can be corrected by
[365] proper action. First and foremost is the relative cheapness of power and fuel in Baghdad. The cost of the electric power unit in most cities is double that of Baghdad and rarely is a municipality-owned plant able to supply sufficient power to industry. The cost of oil fuel is at least ten percent higher outside Baghdad. The correction of these factors, together with a more equal distribution of educational, housing, transport and social welfare facilities, could greatly relieve the situation. The Law for the Encouragement of Industry could also be amended so as to give additional concessions for industries established in other parts of the country. The cost of labour and land is already becoming burdensome for industry in Baghdad. This, in addition to the social evil of overcrowdedness, calls for immediate consideration.

434 (4) **Limitation of Markets**: A newly industrialised country can hardly hope to find foreign markets for its finished products. It has to depend on its home market. The market in Iraq, with its small population (about 5 million inhabitants), of low purchasing power (annual income per head is estimated at between £ 20 and £ 30 or $85), affords very limited scope for large-scale industry. Many of the industries studied at one time by the Industrial Bank, such as the making of artificial silk fibres, the manufacture of paper and cardboard from straw, and the printing of cotton piece-goods, had to be abandoned because the smallest economic unit of these plants is much beyond the capacity of the Iraqi market to support. This situation will no doubt improve as the whole economy of the coun-
439 try expands. But it should be possible to deal with this situation
648 more effectively by joint action on the part of the Arab States, along lines already discussed at high political level. These discussions have had the object of reducing or abolishing inter-state tariff barriers so as to make the whole area one market. Such an action is indeed vital to the progress and prosperity of these countries and their peoples. It should be remembered that before World War I, these countries formed one economic and political unit under the Ottoman Empire.

464 (5) **Labour, Technical Staff and Management Problems**: The supply of ordinary labour, owing to the high rate of population increase (estimated to be one and a half per cent per annum) and emigration from country to town, is quite sufficient and will remain so

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317 The exploitation of salt deposits may ultimately prove to be another industrial possibility. A salt dome known to exist near Basra might provide large quantities of salt for both export and domestic consumption and might make possible the establishment of an alkali plant, for which the gas from the nearby oil field could furnish cheap power. The Mission therefore suggests that core drilling of this dome be undertaken in order to appraise its commercial possibilities.

433 In the process of industrial development the host of small enterprises which account in the aggregate for a considerable output should not be neglected. Among these are shops engaged in tire retreading, reclamation of lube oil, battery and electrical repair work, automotive and machinery repair, wood-working, etc. Many of them could be assisted to improve their production through installation of power-operated tools and other equipment.

In starting new plants and expanding old ones it is important that capital charges be kept at a minimum by arranging for maximum possible utilization of the installed equipment. This involves the employment of as many shifts as possible, the use of machines at maximum working speed and, above all, the use of purchased power. In the past, industrial plants have added unnecessarily to their capital overhead by installing their own power plants. Such plants usually prove costly since they operate only part of the time. Single plants catering to both industrial and lighting needs are
● 365 more economical because of a high and steady load factor. In order to induce industries to purchase power, however, the price of electricity for industrial use will need to be reduced. Such a reduction could be achieved in Baghdad, the principal industrial center, particularly if steps were taken to relieve the Baghdad Light and Power Company from the heavy burden of sharing its profits with the Iraq government and also having its profits taxed by the United Kingdom. Elsewhere, such as in Mosul, a reduction in power prices depends on more efficient management.

Financing of Industrial Development

433 471 The Mission believes that complete government ownership of industry should be adopted only where absolutely necessary. In general it will prove necessary only where private capital is not available either because the contemplated investment is too large,

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452 probably amounted to only ID 2,300,000 of which about 70 percent represented urban mortgages. Of the latter the greater part probably consisted of mortgages on buildings other than houses.
[652] At the beginning of 1950 a government Mortgage Bank began operations. Only ID 100,000 of an authorized capital of ID 1,000,000 has, however, been paid in; and the Bank has had to supplement its resources by borrowing. Moreover, it can make loans only for a maximum of four years and up to ID 2,000. To facilitate an expansion of its operations, the Mission suggests that the Development Board provide funds sufficient to increase its actual capital to about ID 1,500,000 and that the Bank be authorized to extend the duration of its mortgages to at least 15 years where warranted.

344 The Mission has given no special attention to the need for public buildings for which the Development Board has budgeted ID 3,350,000 in its five-year program. Undoubtedly the construction of new buildings for the accommodation of government offices is in certain cases desirable, for existing government buildings are for the most part scattered, overcrowded, poorly lighted and equipped and therefore not conducive to working efficiency. As already indicated, the new railway building in Baghdad should provide some space for government offices.

Water and Electricity Supply

364 365 With respect to community facilities, the most urgent tasks appear to be the installation of sewage systems for the major cities, and the provision of safe water supplies and electricity.

It is suggested that a start be made with a sewage system in Baghdad, since the rising level of the subsoil waters makes the need of this city most acute. A plan for such a system has already been prepared by consultants to the government. The initial step might be to carry it out for that portion of the city on the east bank of the Tigris. It would be useless, however, to proceed unless there is a determination to make connections with the system compulsory for all property owners who are supplied with municipal water.

A safe water supply is, as was pointed out earlier, one of the keys to the health problem. While a number of cities and towns now have a reasonably safe water supply, the situation in the great

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majority needs substantial improvement. The Department of Municipalities has drawn up a five-year program to provide or extend water supply systems for 114 municipalities with a total population of 943,000 people. Since such water systems are technically simple and the need is great, the Mission suggests that the Department be authorized to proceed with this program. Water supply systems for villages must, of course, be simple and inexpensive. In some cases, wells may prove to be the solution, although frequently brackish water is encountered; in other cases, water piped from a stream or canal with the help of a small pump and run through simple filters may be possible.

Outside of Baghdad and Basra municipal power plants are generally inadequate, and a considerable number of municipalities with a total population of 175,000 have no electricity at all. Baghdad and Basra, which together account for a generating capacity of 51,000 kilowatts, have a sufficient supply; and Kirkuk is adequately supplied from the large power plant of the Iraq Petroleum Company. Total generating capacity available in the remaining municipalities, however, is only 14,000 kw. A program for the expansion of this capacity and the provision of electricity for all municipalities would involve the installation of generators with an aggregate capacity of 10,000 kw. It would be desirable to proceed with such a program, provided simultaneous steps were taken to improve the management of municipally-owned power plants outside Baghdad and Basra. In these two cities the power plants are owned and managed efficiently by a private company and the Port respectively. At present the machinery in the plants of other municipalities is poorly maintained and little or no attention is paid to depreciation. Power "losses" are as high as 36 percent compared to not more than eight percent in Baghdad and Basra; and the rates charged range from 30 to 55 fils[4] per kw-hr as contrasted with 18 fils and less in Baghdad and Basra. To remedy these evident deficiencies it is recommended that serious consideration be given to entrusting the management of such plants to a competent private firm like the Baghdad Light and Power Company.

The Mission does not believe that it would be economic to develop hydroelectric power at present. The capital cost of hydro-

[4] One dinar equals one thousand fils.

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electric plants is considerably greater than that of equivalent thermal capacity; and Iraq possesses very cheap fuel for the generation of power. At present municipal power is used primarily for lighting, and even if industrial plants should turn increasingly to municipal stations for their power supply they would be able to obtain considerable amounts of "off-peak" power in such cities as Baghdad and Basra without any increase in generating capacity. In the judgment of the Mission hydroelectric power should be considered only if it does not need to be transmitted over long distances and then only if the demand is such as to insure a steady and high load factor. It is not yet clear that the Wadi Tharthar depression will actually store enough water to permit the generation of power, and the power which might be generated at the dams projected elsewhere is likely to be too far removed from major consuming centers.

VII. Education

Education is a basic condition for the agricultural, industrial and technological progress of the country as well as for the development of a fuller cultural life and the sound growth of democratic institutions. Its importance has received growing recognition and considerable progress has been made. In years of financial stringency the budget for education has usually continued to expand while other government expenditures were curtailed. In the last two decades, the number of schools rose from 262 to 1,100, the number of pupils from 32,750 to 175,000 and the number of primary school teachers increased from 1,325 to 6,588. During the same period, expenditures on education rose from about ID 300,000 per year to well over ID 4,000,000—a not inconsiderable advance even after taking into account the rise in prices.

Nevertheless, there are still only 175,000 children in schools out of about 750,000 of school age. Despite the increased emphasis on primary education, expenditures for this purpose still take only 51 percent of the education budget. The number of children in school declines sharply with each succeeding grade, so that only about half the children starting in primary school actually finish their

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sures of production and assistance which tend to shield industry against competition. There is much to be done to help industry to achieve better control of the quality of its products, in reducing waste through material salvage, in analyzing production costs, in making market surveys and in raising labor efficiency through improved lighting, noise abatement, in-plant training programs and better work flow.

IV. Other Suggestions for the Improvement of Industry

Possibilities for Economies in the Use of Capital

Whenever the capital cost of a plant is an important determinant of production costs, it becomes essential to utilize the plant to the fullest extent. This may be accomplished, for example, by increasing the number of shifts, by extending the work week and by stepping up machines to their maximum economic speed. Completely integrated plants seldom if ever offer the opportunity for this type of operation, because certain machines are never called upon for continuous use. This is, of course, very noticeable where the plant does all its own maintenance work, even to all of its foundry items. The solution is obviously one of resorting to contracting or sub-contracting with concerns specializing in particular operations. For example, a single finishing and dyeing concern might advantageously serve two or more textile mills, where the capacity of these mills is insufficient to load separate finishing departments to their economic limit.

In Iraq there is a tendency in industry to generate its own power rather than to purchase it. This leads to the installation of expensive facilities which are utilized only part of the day. While industry is operating, many municipal power plants stand virtually idle because they serve primarily lighting needs and their peak load accordingly comes at night. In some cases, where large quantities of process steam are needed, industrial enterprises may be justified in generating their own power, but for the most part, the purchase of power is preferable. Unfortunately, power rates, except in Basra and Baghdad, are so high that the purchase of

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433 345 power by industry is out of the question. It is hoped, however, that in time this may be corrected.

Even in Baghdad the purchase of power by industry would be greatly stimulated by a reduction in the industrial rates of the Baghdad Light and Power Company. Profits, after depreciation [471] but before taxes, are now over half of gross receipts. Under the terms of its concession, the company pays a substantial part of these profits to the Iraq Government, the remainder being allocated to United Kingdom taxes, reserves for capital expenditure and dividends. The Iraq Government's share in the profits effectively constitutes a tax on electricity consumption, which it might be well advised to forego if it could thereby secure an equivalent reduction in power rates to Iraqi industry. The government might, therefore, explore with the Company and with the tax authorities in the United Kingdom the possibility of an equitable arrangement, whereby power rates would be reduced as far as possible, while still providing adequate funds for capital improvement and continuing a fair return to stockholders. A possible arrangement that has to be considered is the exercise by the government at the end of 1954 of its option to purchase the undertaking as a going concern. If such a course should be decided on, it would be desirable to enter into a management contract with the Company in order to ensure the continuance of efficient operation.

433 488 452 The amount of working capital required in Iraq per unit of production is exceedingly high, partly because enterprises want to be as self-sufficient as possible with respect to needed supplies and materials, partly because Iraq is relatively distant from international markets. Probably the best means of reducing the need for working capital would be through the erection and operation of a bonded warehouse which would provide all industries with facilities to store, until needed, supplies, material and chemicals of all types under conditions that would enable banks to extend credits on the stocks in bond. In this way the banks would have assurance that the stored material would not be released prior to full payment plus interest, storage and service charges. In effect, this would permit operations along lines very similar to those in highly developed countries where supplies and materials are obtained in accordance with production schedules.

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Transport licenses should be granted only if the proposed operator appears responsible and sufficiently well equipped to perform the transport services and if there is evidence of present or prospective need. Operators should be required to take out insurance, to adhere to published rates, routes and schedules, and to conform to loading regulations.

Maintenance

The maintenance of the new road system when once completed is even more important than its initial construction. Service and funds must be assured to keep the roads in the condition in which they have been built. The Minister of Finance should budget for annual expenditures, to be estimated by the Public Works Department, for maintenance of the road systems and all accessories including sign posting, for improvements necessitated by increased traffic, for inspection and control of road traffic and for the traffic police required. The expenditures should, in general, be covered by revenue from those who actually use the roads.

Subsidiary Roads and Urban Streets

It is recommended that at the earliest opportunity a system of cooperation between the Public Works Department and provincial and municipal road departments be established to bring maintenance, traffic control and municipal licensing in line with the government's policy in these matters and that appropriate provision for this cooperation be made in the budget.

City Transport

An essential part of the country's transport system is passenger transport service in the capital. Baghdad and its suburbs form a city of a population of over half a million spread over an area with a radius of four to eight miles. In 1938 it was decided to establish a municipal passenger service to be operated with buses. The war intervened and limited services were brought into operation in 1942 with converted army trucks equipped with locally built bodies. A loan of ID 500,000 was raised, more vehicles purchased and workshops and garages of sorts installed. The services deteriorated with the poor equipment, which was all that was available in wartime, and the municipality was unable to carry the financial burden. Early in 1950 the service was taken over by

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the central government. Since then it has been operated by an Administrative Board under the Ministry of the Interior, consisting of a Director General, who is president, and four other members. 365

The Board operates bus lines in and to all parts of the city and suburbs with a fleet of 236 buses of sundry makes and types. They are in poor condition owing to excessive service and the poor equipment of workshops and garages. At the time of the transfer to the central government, 70 percent of the vehicles were under, awaiting or beyond repaid. With effort the proportion has been brought down to just over 50 percent at present. A wise decision has been taken to standardize the type of bus to be operated in the future, and 100 new vehicles have been purchased at a cost of ID 500,000 to be paid over a period of three years. This sum includes a generous supply of spare parts. The services of one traffic and one workshop expert have been obtained on loan from the London Transport Executive to take up duties in Baghdad in September 1951.

TABLE 7

BUDGET SUMMARY FOR 1951-52

REVENUES		
Passenger traffic	ID	590,000
Miscellaneous (chiefly sales)		5,000
		595,000
EXPENDITURES		
Salaries and allowances	ID	47,150
Wages and allowances		227,600
Board, etc.		3,300
Administrative expenses		33,500
Maintenance and new buildings		16,000
Maintenance of vehicles		90,000
Fuel and oil		65,000
Loan service		61,662
		544,212
CAPITAL EXPENDITURE		
New buses	ID	205,000
Machinery and tools		7,000
	ID	212,000

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365 The operating position may be judged from a summary of the sanctioned budget for the current financial year, ending March 31, 1952.

Administrative expenses include a contribution of ID 2,000 to the Baghdad Municipality for maintenance of roads. The ID 90,000 for maintenance of vehicles is alarming. This high figure is caused chiefly by the large number of different types, the difficulties of procuring parts, the high cost of manufacturing substitutes and the large number of breakages of vehicle springs, axles and other parts due in great measure to Baghdad's bad roads.

A program to put the service on a sound operating, administrative and financial basis would include the following features:

1. Modernization of the central workshop and equipment, preferably moved to a site in the industrial section of the town.
2. Establishment of one central garage and four auxiliary terminal garages, all largely open air compounds, the latter to accommodate early and late services.
3. A fleet of 180 to 200 standard buses, to allow for reasonable running shifts and sufficient time for maintenance and servicing.

The Mission suggests that the cost of this program, estimated at ID 500,000, be financed by the Development Board. At the same time, however, it might be considered whether economies in administration could not be achieved by entrusting management entirely to a Director General rather than a Board, and whether revenues could not be increased by a stricter check on the collection of passenger fares.

VI. Airports

508 Both Iraq's international airports are very favorably situated within the town limits of Baghdad and Basra Port (Magil). This great advantage should be preserved and any developments should be on the present sites. Climatic conditions are favorable, and only a runway in one direction is required to accommodate traffic at all seasons. Town developments need suffer no inconveniences from

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361 The development of the new parts of the cities is in striking
363 contrast to the old. Broad tree-lined boulevards have been laid out in the form of dual carriage-ways, the dividing strip being ornamented with flowers and shrubs. Along these boulevards there has been intermittent residential building activity, so that vacant lots alternate with the houses and gardens of the well-to-do. In Baghdad, particularly, many of these vacant lots have been occupied by squatters. In the largest cities, the new boulevards and the main streets are paved, but the paving is apparently of poor construction, as it has deteriorated rapidly. In the other cities and towns, however, the streets have merely been graded.

365 Most towns with a population of over 6,000, and a few smaller one, have both a piped water supply and an electricity system, which are, with three major exceptions, managed by municipal boards under the direction of the Ministry of Interior. The water is, however, not always purified and the electricity is invariably expensive. No city, not even Baghdad, has a sewage system. Waste water is disposed of into cesspools or allowed to run into the streets where it is apt to collect in stagnant pools.

The Lack of Coordination in Urban Planning

361 In spite of their superficially impressive appearance, the new sections of the cities have not been properly planned. Streets and traffic circles have been laid out according to prescribed geometrical patterns without paying much attention to their functions or to the need for creating integrated residential areas with appropriate housing for the different income groups and provision for schools, shops and hospitals or clinics. In the largest cities, the importance of allocating zones for different purposes and of establishing a proper interrelation between the zones has been largely neglected. Growth has been, in fact, piecemeal and spasmodic rather than coordinated and regular, and emphasis has been placed more on the ornamental than on the useful. Some traffic circles, for example, are unnecessary; others are even safety hazards. The practical value of new streets is vitiated by the common and dangerous practices of using both carriage-ways in both directions and of taking short cuts in the wrong direction around traffic circles. Sometimes streets have been ruthlessly cut or widened through built-up areas

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have a mosque, a church, a post office, a cinema, a restaurant, a police station and an institute equipped with reading rooms and a debating chamber. Streets and alleys are laid out to conform to the ground contours and paved with asphalt macadam. The streets are lighted and have recently been planted with trees. The project is much in advance of anything else that has so far been undertaken in Iraq, but its cost and the large element of subsidy involved make it impossible of general emulation.

The Iraq Petroleum Company is the only large private industrial concern which has provided substantial housing facilities for its employees, although in 1943 a law was approved compelling industrial project owners to construct houses for their laborers. This law has apparently been ineffective. Although there is much to be said for placing responsibility on industry for housing in out-of-the-way places, the Mission is of the opinion that, in general, provision of housing is an inappropriate burden on industry.

Private Housing; Mortgage Credit

The most spectacular ventures in private housing in recent years were two grandiose developments in Baghdad for the well-to-do. Both of there were financial failures.

Private housing of a more modest character for the middle classes, who cannot afford large outlays, requires assistance in the form of mortgage credit. In the main report, the Mission has recommended that the facilities offered by the Government Mortgage Bank be augmented. Instead of the original capital of ID 100,000, capital resources of ID 1,500,000 are suggested. The duration of loans, which is now limited to four years, should be increased to 15 years where it is considered desirable.

V. Public Utilities

As indicated earlier, considerable progress has been made in providing the larger towns with water and electricity, but sewage systems have been wholly neglected. The Ministry of Interior is, with a few major exceptions, responsible for the planning, installation and general supervision of these public utilities. The actual

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365 operating is under the control of Municipal Water and Electricity Boards. The Boards appear to be inexperienced in the management of such concerns, financial control being especially inadequate.

Water

312 One of the prime requisites of a community is a safe water supply. The principal source of water is the rivers. The Tigris, the Euphrates and their tributaries offer continuous and generous supplies of fresh water during the entire year. Communities have naturally stayed close to these sources of water and close to the many irrigation canals which now extend from the river systems.

While water from the rivers and irrigation canals is fresh (low in salt content), it nevertheless is high in colloidal and organic material, and usually high in bacteria. It is necessary, therefore, to treat such supplies of water for human consumption if general health is to be maintained (see Annex D, *Health*).

There are also a number of communities, mainly in the North, which are not situated near surface sources of water. These have to rely on subsoil water which, although it may be free from pollution, is apt to be brackish.

365 312 The first modern water works was constructed shortly after the first World War. Development in this field has reached the point where approximately 40 municipalities have modern water systems, the outstanding ones being in the larger cities of Baghdad, Basra and Mosul. All water works follow a similar pattern and consist of a raw water pumping station, sedimentation tanks, sand filters, chlorine treating equipment and an elevated surge tank. The capacity of the various water works is usually premised on the basis of 25 gallons per person per day with an allowance for a population growth in 25 years of 1.5 percent per annum.

Administration by the Water Boards has thus far been good. The Boards have established water rates for large consumers on a metered basis, while small consumers receive a flat rate. In either case, the rates are very reasonable and vary from 10 to 30 fils per cubic meter or from 100 to 250 fils per month, where a flat rate is established.

The development of municipal water systems has not taken place as rapidly as it should, primarily because of the lack of suffi-

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cient funds. The Department of Municipalities, however, anticipating assistance from the Development Board in its financing, has prepared a plan of construction during the next five years which will include the expansion or construction of new facilities in 114 municipalities having an aggregate population of approximately 950,000. The plan is practical and technically follows present methods. Many of the treatment plants are of the same size. This, fortunately, permits standardization which considerably reduces capital costs. The total estimated cost of the program is ID 5,651,600 of which approximately 50 percent would be in foreign exchange, mostly in sterling.

There are numerous villages in addition to municipalities where the problem of obtaining water is very critical. In many cases, this could be relieved by either a single well or by pumping small quantities of water at some distance from streams or irrigation ditches. Such sources of water would in many cases be impure and would require the use of clay filters. Nevertheless, it would relieve the people of the burden of carrying water for human consumption a great distance. These facilities should not cost more than ID 1,500 per installation.

With the need for pure water so critical, it is recommended that the Development Board assist the Department of Municipalities in financing the five-year program for the municipalities. In the meantime, the Department should study the problem of supplying water to the numerous villages and formulate plans for consideration by the Development Board.

Sanitation

Adequate disposal of waste water is an acute problem throughout Iraq and a long-term program needs to be drawn up. Pending this, a start should be made with a sewage system in Baghdad, since the rise in the subsoil waters makes the need of this city most acute. In 1947, an English firm prepared a report on the installation of a sewage and drainage system for the city—complete with pumping stations, sewage purification works, etc., and estimated to cost ID 4,600,000 on the east bank of the Tigris and ID 4,300,000 on the west bank. The proposed scheme could be undertaken in stages.

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365 364 The initial step might be to carry out the plan for the east bank according to a schedule based on the relative importance of its various elements. It would be useless, however, to proceed unless connections with the system are made compulsory for all property owners. No new constructions or major building alterations or enlargements should be permitted without adequate provision for such connections. Existing structures which are connected to the water supply system should be required to connect gradually to the sewer, according to a scheme to be worked out by the government and based on sanitary, engineering and financial considerations. The administration of the sewage system would logically come under the jurisdiction of the Water Board. The system might be made to help pay for itself by setting a certain surcharge over the cost of water actually used and then discharged into the system.

For the other larger cities, surveys should be conducted now to gather the data necessary for the actual design of each system. For example, the preliminary studies for the sewage problem of the City of Mosul should be preceded by a topographic survey. It is believed that the entire flow of the sewage and rain water could be designed so that no pumping will be needed. Chemical treatment of the sewage is to be preferred to discharge into the Tigris, because people living in downstream villages get their drinking water directly from the river.

For the smaller towns and villages, efficient and inexpensive individual sewage disposal units should be installed privately according to models prepared and tested by the government. Community bath and toilet facilities should be provided in the poorer sections of towns to supplement private individual units. Public lavatories should also be provided in the cities wherever there are concentrations of people, such as in business areas, parks and other public places.

Electric Power

365 377 Municipal power plants serve primarily public and domestic lighting needs. Most industrial plants supply their own power. Cheap fuel also makes it possible for small direct-connected diesels to compete favorably with electric motors as prime movers, pri-

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marily because the capital cost of all the electrical equipment is eliminated. It is chiefly for this reason that there are over 3,000 large diesel-driven irrigation pump installations along the Tigris and Euphrates Rivers, many of them very close to electric generating stations. In a similar manner, most of the older industrial enterprises and even many of the new ones have followed the same practice of using diesel engines as a source of power. In the field of public transportation, diesel or gasoline engines are universally used as a means of motive power, while kerosene and other fuels meet the country's needs for domestic heating and cooking. It is not surprising, therefore, to find the development of electric power to be on a very small scale and the per capita consumption among the lowest in the world; the total generating capacity in utility plants operating for public use is not more than 65,000 kw. Of this 42,000 kw. serves the city of Baghdad and 9,000 kw. is at Basra

Production and distribution of electricity in Baghdad are carried on by the Baghdad Light and Power Company and in Basra by the Port Authority. In Kirkuk the municipality receives its power from the Iraq Petroleum Company's large plant but is responsible for distribution. In all other municipalities, the electricity system is run by the local Electricity Board.

Recent expansions by the Baghdad Light and Power Company and by the electric plant in Basra appear to be adequate for the immediate future, unless new industries or other heavy loads create power demands beyond those now anticipated. Apart from Kirkuk, however, the remaining municipalities are badly in need of power. To meet this need, the Department of Municipalities has established a plan of development which is very practical. This plan calls for the construction of new plants in approximately 56 municipalities having an aggregate population of 175,000 and the expansion of existing plants in 47 municipalities having an aggregate population of approximately 750,000. All plants would be based on the use of relatively small, slow-speed, heavy-duty, diesel-engine generators having a combined capacity of not over 10,000 kw. Fortunately, many of the generating units would be identical, permitting standardization and allowing maintenance to be carried out by central repair facilities. It is estimated that the total cost including

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365 371 distribution systems would be approximately ID 1,550,000, of which ID 1,000,000 would be in foreign exchange, mostly sterling. The financing of this development will need to be undertaken by the Development Board.

365 It is important, however, that expansion of supply be accompanied by thoroughgoing measures to assure more efficient management. The only utilities that can be said to be operated efficiently are those at Baghdad and Basra. In spite of a considerable burden on its revenue (see Annex D, *Industry*), the Baghdad Light and Power Company charges the lowest rates in the country, pays regular dividends to its stockholders and finances plant expansions from reserves set aside for such purposes.

Rates charged by the municipally-owned plants vary widely, and, generally speaking, are twice those in either Baghdad or Basra. In some localities, the demand for power is so much greater than supply that rates are made exceptionally high for the purpose of discouraging the normal use of electricity by large consumers. Distribution losses are frequently as much as 36 percent and because of poor maintenance an engine generator is seldom capable of operating at more than 50 percent of its designed rating. Records are also very poor and in some cases nonexistent. It is obvious, therefore, that the present form of administration is unsatisfactory and must be changed if the consumer of electricity is [471] to be adequately served. It is recommended, therefore, that all publicly-owned electric utilities be placed under the management of a competent private firm like the Baghdad Light and Power Company by means of a mutually satisfactory operating contract. The contract should require all operations to be conducted in accordance with sound utility practices and it should include some incentive to reduce rates to the level now enjoyed in Baghdad and Basra.

371 375 It has sometimes been argued that hydroelectric power should be developed as part of the projected water-storage schemes. While the possibility of such development undoubtedly exists, the Mission believes that thermal plants are at present the most economic source of power in Iraq. Hydroelectric plants require a much higher capital investment than thermal plants. They tend to be economical only where fuel costs are relatively high and there is